



US006962121B1

(12) **United States Patent**
Kuklinski

(10) **Patent No.:** **US 6,962,121 B1**
(45) **Date of Patent:** **Nov. 8, 2005**

(54) **BOILING HEAT TRANSFER TORPEDO**

(75) Inventor: **Robert Kuklinski**, Portsmouth, RI (US)

(73) Assignee: **The United States of America as represented by the Secretary of the Navy**, Washington, DC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1 day.

(21) Appl. No.: **10/911,749**

(22) Filed: **Jul. 30, 2004**

(51) Int. Cl.⁷ **B63B 1/34**

(52) U.S. Cl. **114/67 A; 102/399**

(58) Field of Search **114/67 A; 102/399**

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,075,489 A * 1/1963 Eichenberger 114/67 A
3,205,846 A * 9/1965 Lang 114/67 A
3,392,693 A * 7/1968 Hulsebos et al. 114/20.1

3,435,796 A * 4/1969 Merrill 114/67 A
3,455,266 A * 7/1969 Giles 114/67 A
6,684,801 B1 * 2/2004 Kuklinski 114/67 A

* cited by examiner

Primary Examiner—Jesus D. Sotelo

(74) *Attorney, Agent, or Firm*—James M. Kasischke;
Jean-Paul A. Nasser; Michael P. Stanley

(57) **ABSTRACT**

A system has a source of gas venting gas at a nose portion of the vehicle to create a gas/vapor cavity on the nose portion and an adjacent hull of the vehicle. A thermal engine propelling the vehicle through ambient water creates waste heat for heating the hull to raise the temperature of the gas/vapor cavity extending over it. A pump aft on the vehicle recirculates a portion of the gas/vapor cavity as recirculated gas to the nose portion. The velocity of the recirculated gas of the gas/vapor cavity is controlled by the pump to be virtually the same as the relative flow rate of the ambient water along an interface boundary between the gas/vapor cavity and the ambient water.

17 Claims, 3 Drawing Sheets

